



from the CEO

Last year, Santee Cooper employees faced a number of challenges and achieved notable results as we continued serving with dedication our customers, communities and state.

We started 2018 with Winter Storm Grayson on Jan. 3. The storm brought rarely seen ice and more than 6 inches of snow to our generating stations and the customers we serve. Our employees had to be innovative while working around the clock protecting power lines and equipment, and they successfully fought the effects of below-freezing temperatures and helped our customers stay warm.

In April, we celebrated with Palmetto Electric Cooperative a decade's worth of Green Power at the RBC Heritage Presented by Boeing, and we are continuing that successful partnership this year.

Hot temperatures in June couldn't keep the crowd away as we grasped shovels and turned over dirt at a groundbreaking ceremony for Camp Hall, our next generation industrial park that combines commerce, convenience and community. With Volvo Car USA as its first tenant and electric service from Santee Cooper and Berkeley and Edisto electric cooperatives, Camp Hall is poised to bring economic development gains to the state for years to come.

We launched a new customer service app in 2018 called My Energy Link, or MEL. MEL makes doing business with us even easier for customers, and it allows them to see their information and energy use right at their fingertips.

We made many strides in our solar and Reduce The Use programs, most notably achieving our 2020 energy-efficiency goal two years early. We also opened the Bell Bay Solar Farm near Conway, and our incentives successfully increased rooftop and community solar participation.

Hurricane Florence in September brought record flooding, especially in the Conway area. Employees quickly restored power to our transmission and distribution customers,



and they worked for weeks to make sure floodwaters didn't compromise the ash ponds being excavated at the former Grainger Generating Station site. It was an immense and heroic feat involving thousands of manhours that, in the end, kept ash out of the Waccamaw River.

Through all of these efforts, our employees doubled down on safety in 2018 and ended the year with a commendable four incident-free months.

I appreciate what our employees do every day. As we begin a new year, our commitment to our customers, our communities and our state will not waver.

A handwritten signature in black ink that reads "Jim Brogdon".

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Interim President and CEO

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Conquering the Waccamaw River

Through hurricanes and floods, Santee Cooper employees persevered for customers and the environment.

by Tracy Vreeland

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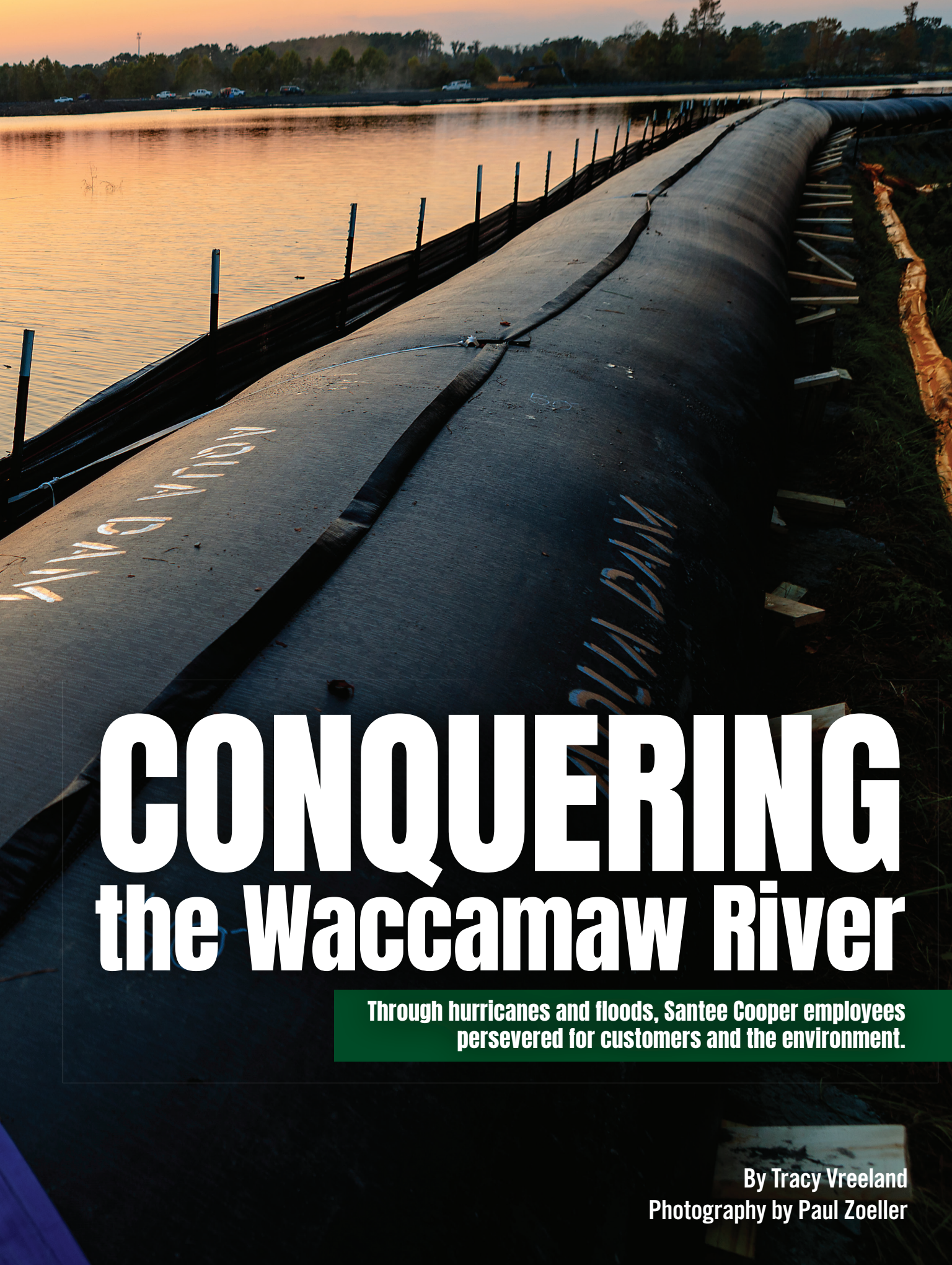
Photo by Paul Zoeller

Todd Robertson, supervisor of construction services, was one of many employees who spent their days and nights working on pumping operations at the former Grainger Generation Station's ash ponds after Hurricane Florence. Quick-thinking and ingenuity by Santee Cooper employees helped protect the Waccamaw River during record-breaking floods.





Tom Henderson, manager of capital projects, monitors water pumps used to fill the AquaDam surrounding Ash Pond 2.



CONQUERING the Waccamaw River

Through hurricanes and floods, Santee Cooper employees
persevered for customers and the environment.

By Tracy Vreeland
Photography by Paul Zoeller

On a late-summer Tuesday in September, a light breeze wound through the treetops while birds chirped delightful melodies. The sun was shining, warm and bright, but the beauty of the day stood in direct contrast with the menacing and dangerous threat that was coming. All eyes along the South Carolina coast were on Hurricane Florence as it tore its way across the Atlantic. A massive and formidable storm, the hurricane blanketed 500 miles with sustained winds of 130 mph. The possibilities were terrifying as the Category 4 storm headed right for us.

Evacuations were ordered for the entire coast of the Carolinas, and the waiting began. Four very long, drawn-out days left tensions and anticipation levels high. The storm weakened, relieving some anxieties, but its approach was painfully slow. It was fortunate that the winds weren't as strong as predicted. It was unfortunate that once the storm finally made landfall, it hovered over the region, dropping more than 23 inches of rain in some parts of Horry County. It flooded cities to our north and soon enough, that water would be flooding us, too.



Distribution Crew Supervisor Jason Cox and Line Technician Daren Gore view damage after Hurricane Florence.

Hurricane Florence wasn't as powerful as some of our past storms. But in many ways, it was more devastating.

In the week leading up to the storm, Santee Cooper's Corporate Incident Management Team

(CIMT) activated and put a plan in place. CIMT is directed by Lead Incident Commander Ed Bodie and includes participation from just about every department at Santee Cooper.

"The planning was tremendous, with the hurricane and the flood causing everyone involved to continuously think of any potential obstacles that could stop the mission," said Bodie. "We had to have additional backup and contingency plans in place also. Next came the challenges of executing the plans and making changes as required, often in short timeframes, keeping us on our toes and ready for anything."

Mutual aid agreements were executed so extra crews were on standby to cut trees and restore power as quickly as possible. Hotels were booked for line crews and emergency teams, and meals were set to keep them all fed.

Neil James, Santee Cooper's distribution operations manager, was a big part of the effort. Working for Santee Cooper for 33 years, he's been tested by at least 25 storms.

"No storm is the same and each presents their fair share of difficulties, but having experience where everyone knows what to do does help," said James.

Hurricane Florence hit on Saturday, Sept. 15, with wind speeds of 70 mph.

Hurricane Florence took out 50,310 retail customers on Santee Cooper's power grid. Distribution crews were out restoring power throughout the storm, except for a short time that Sunday when wind speeds exceeded 35 mph, too strong to operate a bucket truck.

Hard work paid off, and all customers who could receive power were back on by Monday night.





A transmission crew from Darlington must use a Marsh Master to navigate hard-to-reach equipment in the Great Pee Dee Swamp. Line technicians repair wind-damaged electric poles and lines.

“Everyone is a vital part of our plan and they do an amazing job. Our linemen play a key role because they are frontline employees who must work in the rain, wind, and just about every adverse condition you can imagine, and they always impress me with their professional workmanship and tenacity to work until the last customer’s power is restored. The greater the challenge, the harder they work,” said James.

The winds also took out several transmission lines, including some in swampy areas, which makes restoration pretty tough. Those transmission lines feed electricity not only to Santee Cooper’s substations, but also to our neighboring cooperatives and municipal customers.

“A large majority of our transmission lines travel through heavily wooded areas and across wetlands such as rivers, swamps and marshes,” said Mark Marsh, transmission lines supervisor. “All-terrain equipment is essential for accessing transmission rights of way, especially following a major storm. It would’ve taken several days to restore the transmission system after Florence if it had not been for the specialized equipment and skilled workforce.”

Even though the hurricane’s impacts on power delivery were resolved relatively quickly, the threat was far from over.

CIMT moved operations to the previously closed Conway retail office. The problem: the Grainger coal ash ponds, which were nearly excavated, needed shoring up in the face of record flooding on the adjacent Waccamaw River, as floodwaters from Florence meandered through North Carolina and made their way to the Atlantic Ocean.

Engineers planned around two needs: to protect the integrity of the earthen dikes surrounding the ponds, and to prevent the small amount of ash remaining in Ash Pond 2 from migrating into the Waccamaw if that pond flooded.

“These structures have never, in their entire lifetime, experienced this type of event,” said Mark Carter, manager of construction and transportation services. Carter and his group are responsible for the integrity of Santee Cooper’s dams and dikes. “There were a lot of unknowns. I like to remind people, when you’re dealing with an earthen embankment, you’re not dealing with homogenous, man-made materials like steel. You know what’s in steel. In the ground, in soil, there are deficiencies you can’t see.”



Brian Lynch, manager of environmental resources and water systems, and Ernie Guerry, environmental technician, examine flooded homes as they navigate flooded streets in Conway on their way to take water samples of the Waccamaw River.

What ultimately emerged: a multipronged plan to protect the integrity of the dikes and prevent overtopping of Ash Pond 2, which still had about 200,000 tons of ash inside. It involved pumping water into the ponds to stabilize the dikes against the rising river, installing products to contain particles if needed, sampling the river water to determine if an ash breach occurred and, ultimately, raising the height of the Ash Pond 2 dike.

Carter is a member of CIMT and went through a similar, but less extreme, exercise with the Waccamaw flooding after Hurricane Matthew. From that experience, Santee Cooper learned to pump water into the ponds to equalize pressure and protect the dikes as the water rose. But this time around, the water was expected to crest higher than the top of the dikes.

The team assembled more than 50 portable pumps, additional pieces of heavy equipment, sandbags and other materials for use as needed. There were also several hundred tons of rock already bagged in 1.5-ton sacks, which could

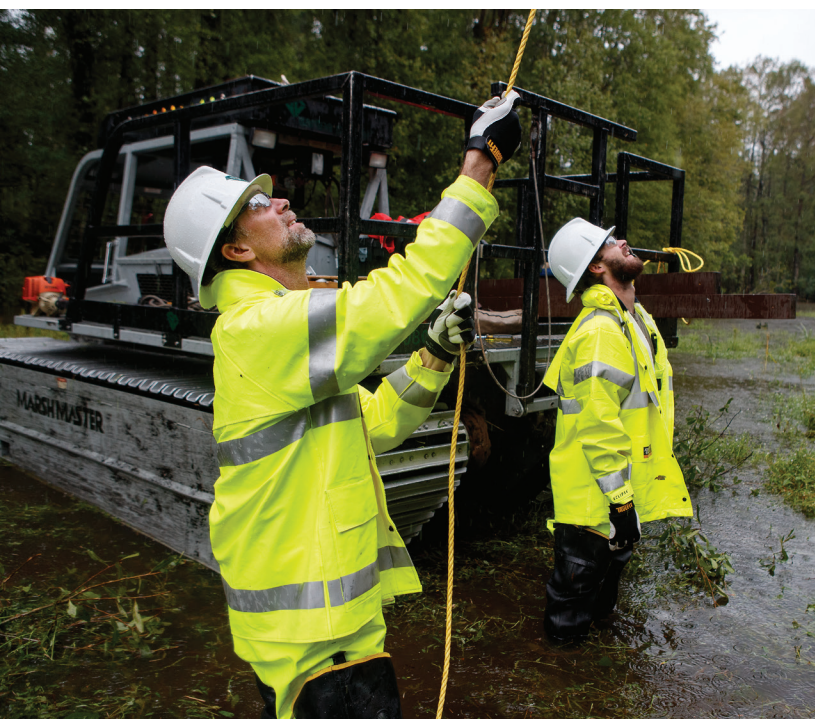
be lifted into place by a heavy-lift helicopter stationed nearby to address any potential breaches in the dike. And they installed silt fencing and floating containment boom to restrict particles if needed.

As the river forecasts kept coming, it became clear that none of this would prevent overtopping if the Waccamaw came anywhere close to its projected crest. Ash Pond 1 could withstand an overtopping without any meaningful environmental impact, but Ash Pond 2 still had about 200,000 tons of ash inside. The team needed to make that dike taller — and fast.

Santee Cooper had used an AquaDam inside the ash pond during Matthew to wall off the ash from any floodwaters. But it was too wide to fit on top of the dike, which is where we needed reinforcement this time. After an intense stretch of internal discussions and calls with the supplier, Carter and a group of engineers decided a thinner AquaDam might do the trick and if so, would add about 30 inches to the height of the dike around Ash Pond 2.



Clockwise from bottom left: Line technicians Larry Hatchell and Chase Stevens assist with repairing transmission lines in the Great Pee Dee Swamp. Line Technician Josh Ham works on a transmission line in the wake of Hurricane Florence. Engineer Mikki Crocker walks among 500 bags of rock, at 1.5-tons each, which Santee Cooper had on standby in case of a breach in the ash pond dikes.



“It was a collective decision, through a series of a couple of meetings, that all occurred in one day,” said Carter. “Late that evening, we pulled the trigger on it.”

Aided by a police escort all the way from Louisiana to Conway, the AquaDam arrived the next evening.

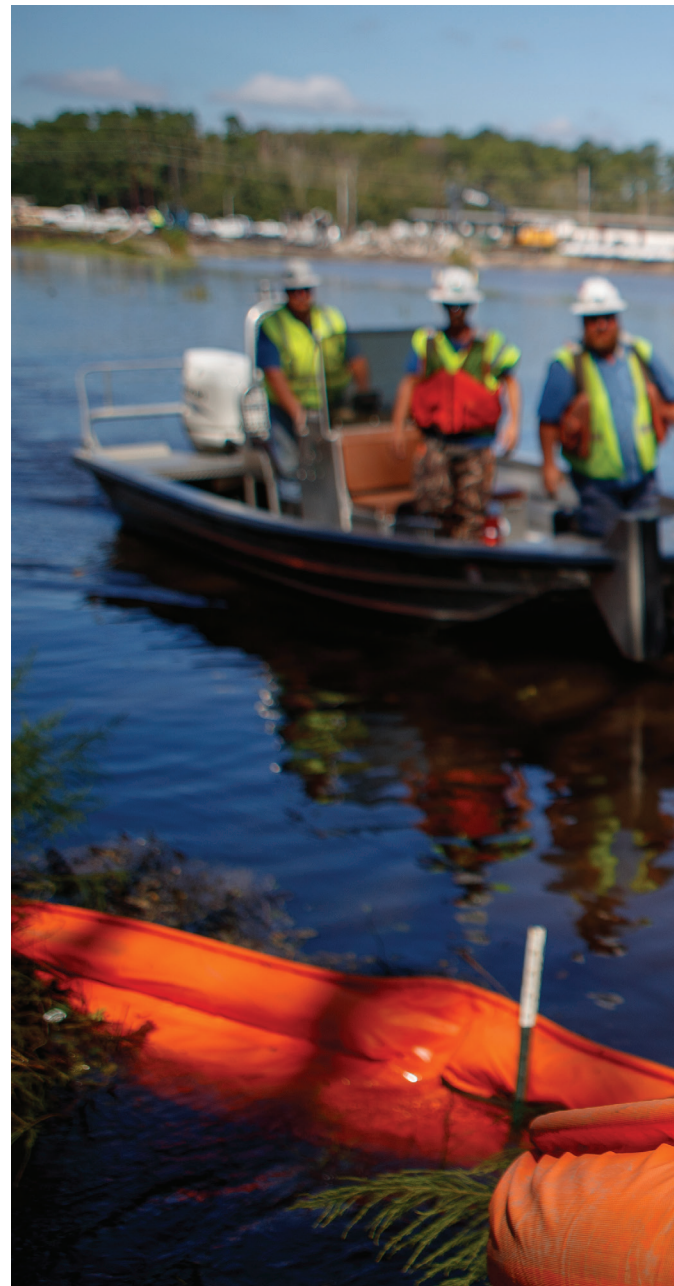
“I was standing at the gate into Ash Pond 2 close to the barges when it arrived at the main entrance by the guard shack. There were several police escorts accompanying the truck, which had been running nonstop from Louisiana in order to arrive at our site,” said Todd Crawford, senior engineer. “All of the escorts were running their lights and were positioned in front and behind the truck. It was definitely a sight to see.”

Time was tight. With the help of the S.C. National Guard, crews worked around the clock to get the AquaDam installed. It wasn’t easy, but they got it installed with hours to spare.

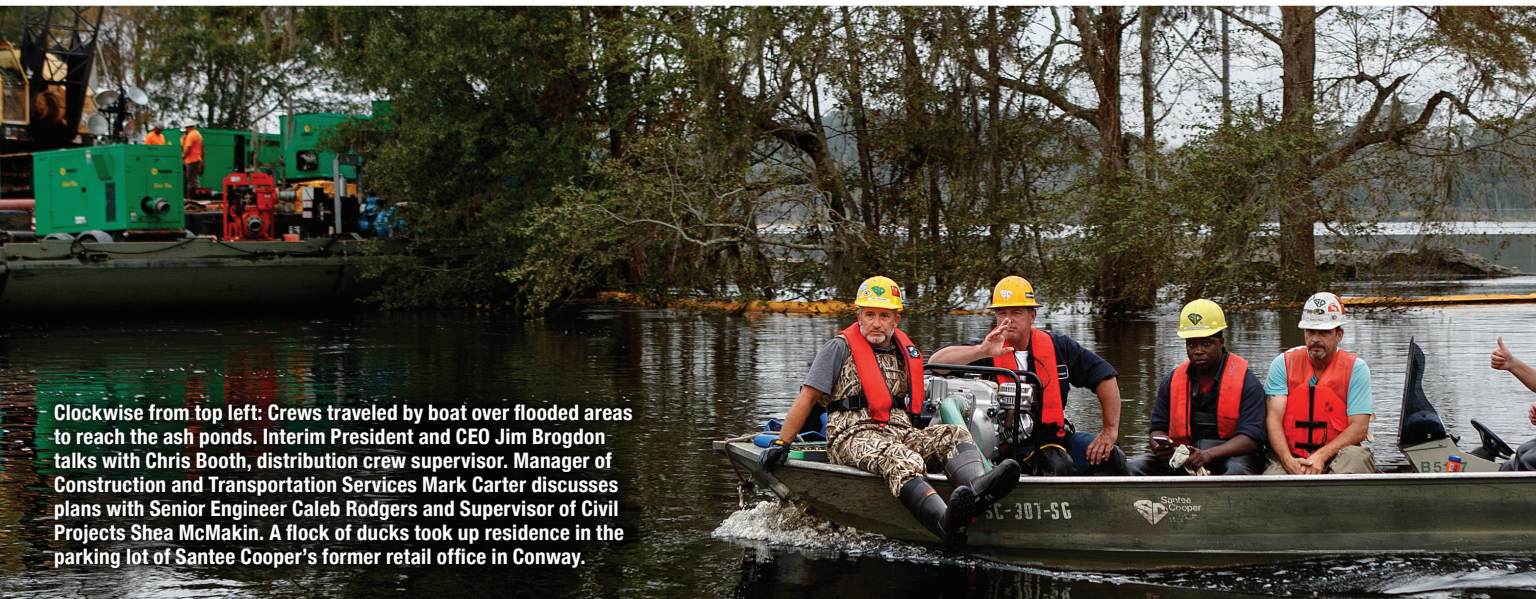
Meanwhile, environmental management crews put out more than 1,100 feet of containment boom around the ponds, as an additional step to filter any particles should they rise to the surface of the water pumped into the ponds. In areas that were difficult to access, the boom was hauled by pickup truck and deployed by hand, or pulled by Santee Cooper or National Guard boats through a canal. A few sections were even deployed by helicopter to avoid any contact with the AquaDam once it was installed.

“Deployment of the boom was certainly a tough job, both logistically and physically,” said Dom Ciccolella, generation technical services superintendent. “I am still impressed that we were able to deploy the amount of boom that we did in such short time. I would estimate that close to 50 people were involved in this effort in some way.”

Clockwise from top left: Boats were the main, and sometimes only, mode of transportation for employees during the flood. Crews begin the process of reversing water flow to drain the ash ponds as waters subside. Environmental Specialist Will Brown deploys containment boom in the ash ponds.







Clockwise from top left: Crews traveled by boat over flooded areas to reach the ash ponds. Interim President and CEO Jim Brogdon talks with Chris Booth, distribution crew supervisor. Manager of Construction and Transportation Services Mark Carter discusses plans with Senior Engineer Caleb Rodgers and Supervisor of Civil Projects Shea McMakin. A flock of ducks took up residence in the parking lot of Santee Cooper's former retail office in Conway.

Ciccolella left his wife and two young daughters at home to work in Conway for several weeks, a story common to many employees working at the site.

"It was definitely difficult being away from home during the flood response, especially for my wife who had to handle the girls by herself while I was away," Ciccolella added.

Other crews kept the pumps going at all times, delivering water into both 40-acre ponds to stay within feet of the height of the rising Waccamaw River. The effort required constant monitoring and adjustments, adding pumps or taking them offline to track the river's ascent.

"The amazing thing is I think we had 37 pumps pumping at one time," said Carter. "We had pumps stationed wherever we could find to put them to keep with the river. In the early stages of the river rise, it was a very steep incline and rising quickly."

Cranes lifted pumps onto barges as the water flooded the land. Trucks were replaced by boats. Drone flights kept an eye on the dikes when ground inspections became impossible. A heavy-lift helicopter remained on standby to place sandbags if needed.

Water sampling continued as the river rose,

and Santee Cooper worked closely with the S.C. Department of Health and Environmental Control (DHEC) on a testing plan to use in case of a breach. Downstream water suppliers were notified of the plans as well.

On Sept. 22, the Waccamaw River started overtopping Pond 1, as expected. There wasn't much concern there, because Santee Cooper had already excavated nearly all the ash out of that pond, and because of work already done to stabilize the dike. But at that point, the river was above Hurricane Matthew level at 17.84 feet, and expected to crest at 22 feet. Even with the added height of the AquaDam, Pond 2 was still in danger of overtopping. Santee Cooper crews continued monitoring water samples, river levels and the dikes, watching the muddy water inch its way up the side of the AquaDam, as they intently waited for the river to crest.

On Sept. 26, the National Oceanic and Atmospheric Administration (NOAA) announced the Waccamaw River had crested in Conway at 21.2 feet. Water came within inches of the top of the AquaDam on Ash Pond 2, but did not overtop it. The AquaDam held its ground and did not succumb to floodwaters.

"It was quite a relief, quite a relief," said Carter. "You know there were other forecasts that were calling for it to be, I want to say, 3 feet higher,



so it was quite a relief to see that the NOAA forecasts were in fact an accurate forecast and the river had crested.”

There was definitely relief among the employees, but no cheers or high fives. While water began to subside, Santee Cooper’s attention to the ash ponds did not. Crews continued to inspect the dikes as the water receded and to sample the water. There was no sign of a breach.

Employees also began the equally important process of pumping the water out of the ponds and back into the Waccamaw River. As an extra precaution, Santee Cooper ordered silt curtain that was placed by the helicopter near the pumps to catch anything coming into them. At DHEC’s request, we also tested water coming directly from the pumps and downstream in the river, and all results were well within permitted limits. Santee Cooper continued to pump water out of the ponds until Oct. 31.

“I have 30 years here at Santee Cooper, have responded to many events of various sizes and scales, but it was just, to me, it was just amazing the way people came together and performed as a team and were just unabated by focusing on this goal,” Carter said. “We were doing everything we could to conquer the Waccamaw River.”



AquaDam Critical in Beating Back the River

By Tracy Vreeland

Photography by
Paul Zoeller

When the Waccamaw River was forecasted to crest at 22 feet, Santee Cooper knew it had to protect the river from the former Grainger Generating Station Ash Pond 2, where excavation had removed all but about 13 percent of the ash once there. We turned to John Dills, Santee Cooper's group manager of station construction. Dills and his team are responsible for large capital projects, primarily at generating stations, and they have a lot of engineering contacts outside of Santee Cooper.

"Once we were pretty sure that Pond 2 would overtop, we were asked to investigate ways to stop ash from seeping out of the overtopped pond," said Dills.

Dills met with Will Stevick and Tom Henderson, both managers in capital projects, and then had a conference call with several outside civil engineers. They decided that the only way to guarantee ash would not leave the pond was to stop the river from getting into the pond in the first place. But how?

"Will eventually located someone who could sell us an AquaDam and provide some of the labor to install it. We purchased it on a Tuesday and mobilized to Grainger on Wednesday to start installation," said Dills.

Dills' account makes it sound easy, but the effort was anything but simple. The AquaDam first had to make it to South Carolina. It traveled 946 miles, through the night, on an 18-wheeler escorted by police cars with lights flashing the entire trip. The truck featured an accordion-style trailer, which provided access to all sides so more people could help unload and speed up that process.

"It was pretty amazing to see it come in that night," said Todd Crawford, senior engineer. "It

Top to bottom: John Browning, senior engineer, and Tom Henderson, manager of capital projects, walk on top of the AquaDam to force air out of it. Waylon Johnson, construction crew supervisor (right), Domenic Ciccolella, generation technical services superintendent, and Brian Holmes, environmental management system director, deploy floating boom in Ash Pond 2. Ciccolella, Engineering Associate Frank Beeson and Crew Supervisor of Bulk Materials Gaylene Allen review drone photos of the flooded ash ponds. Carl McCrea, engineering associate, checks water levels inside Ash Pond 2.



arrived about 8, 9 o'clock with a convoy. You would've thought the president was coming in."

Along with Dills, Henderson and Crawford, senior engineers Caleb Rodgers and John Browning were vital in making sure the installation was complete.

AquaDam representatives worked with Santee Cooper employees and members of the S.C. National Guard to set up the dam.

"Our dike was narrow with not much room to maneuver equipment, so there was a lot of actual manpower. We were fortunate to have the assistance of the National Guard to help with that," said Crawford.

Each 100-foot section had to be rolled out and filled with water that came right from the Waccamaw River. Each section weighed about 250 pounds and generally took four to six people to roll out. It took about 72 straight hours to install 6,000 feet, encircling the entire ash pond.



“The AquaDam was probably more cumbersome and awkward to handle than actually heavy,” said Crawford.

Being the highest point in the river for a few days, the AquaDam became a refuge for animals. Alligators, coyotes, raccoons and snakes escaped the floodwaters and found their high ground along its stretch.

The team kept eyes on it day and night through drone footage and inspections walking on its surface, making sure all was holding up – and those animals weren’t doing any damage.

“It’s tough stuff,” said Crawford.

“Tuesday night, Caleb and I had done a walking inspection of the entire AquaDam and felt confident that we had everything in order and everything was ready for the cresting,” explained Crawford. “Looking at it that night, you could see that we had a good foot of height, if not more, around the entire pond and we felt



really confident that what we had done would be successful.”

When the Waccamaw River finally crested on Wednesday, Sept. 26 – 12 days after Hurricane Florence made landfall – crews breathed a sigh of relief.

“It was a great feeling that I had been a part of stopping ash from getting into the river,” said Dills. “It also felt really good when the water finally got down to below the original dike top, and I knew that I would be able to go home and return to a normal life.”

The AquaDam team was just one part of the massive effort to protect the ash pond dikes and contain the ash. Seeing the response come together was something few will quickly forget.

“No one was doing anything that they normally did at this point,” Crawford said. “But everybody was still working flawlessly together. It was seamless. Everybody knew what needed to be done somehow. And it was getting done. It was really good to see people work outside those normal areas and do something that you can’t rehearse for. It’s a big undertaking and you hope you never have to respond to an event such as this, but hope you are ready if it does happen. I’m proud to say that I felt like we were ready. It was amazing to see all of our folks come together.”



Clockwise from bottom left: Supervisor of Biological Services Casey Moorer samples river water as Environmental Specialist Judson Riser pilots the airboat. A temporary dock was built on Laurel Street in Conway. Crews use heavy equipment to fortify the ash ponds prior to flooding.





Ash Pond Update

By Tracy Vreeland

Santee Cooper began excavating the two ash ponds at the former Grainger Generating Station in 2014. We committed to finishing the project by 2023 and are well ahead of that deadline. Much of the ash has been provided for beneficial reuse by the cement and concrete industry, just as we are doing with pond excavations at two other generating stations - adding environmental and economic benefits to the project.

When Hurricane Florence hit, about 13 percent of the ash remained, primarily in Ash Pond 2. It took about a month to shore up and then dewater the ash ponds, and on Oct. 22, crews

were able to resume excavation. With a priority on finishing the excavation before another weather event threatens the ponds, we began transporting the ash.

Although some preparation work needs to be completed first, ideally most of this ash will also be beneficially reused.

It's expected to take four to five months to remove the remaining 200,000 tons of ash, and then the plan is to turn the former Grainger ash ponds into wetlands.

At Work and Under Water

By Tracy Vreeland

Photography by
Paul Zoeller

Carlita Goff has lived in her Rosewood Estates home in Horry County her entire adult life. In fact, her husband Michael had bought the house before they were married more 20 years ago. Those years were happily spent without worrying about floodwaters reaching their doors. When Hurricane Matthew hit in 2016, that all changed.

At Santee Cooper, “we were working Matthew around the clock, trying to get power restored, and went home Thursday night and the water was pretty high,” said Carlita Goff, area supervisor of distribution engineering.

So high, all she could see were the mailboxes along the edge of the road. But it hadn’t reached her home yet.



Brett Fennell, technical trainer, looks at flooded buildings in Conway.

“We came back to work on Friday and when we went home Friday night, we couldn’t get back in. The water was inside our house,” she said.

She said 14 to 16 inches of water sneaked into her home that day.

“We waited approximately two weeks for water to subside before we could return home,” said Goff. “As you can imagine, having water in your house for two weeks does not leave a pleasant smell. Family photos, books and important papers were lost. I also had to bid farewell to the piano that my mother gave me.”

Goff understands when a hurricane strikes

coastal South Carolina, it’s all-hands-on-deck for Santee Cooper employees until power is restored after the storm. It is both stressful and rewarding. However, the flooding that has come with our most recent hurricanes has added another level of stress to many employees.

“My husband had that house before we were married. He had been in that house 20-plus years,” Goff said. “It had never flooded. It had not been designated in a flood zone. So imagine our surprise in 2016 when in Hurricane Matthew it had flooded.”

Hurricane Florence was predicted to outdo Matthew when it came to floodwaters. But this time, the Goffs had more of a warning. They were able to move some of their more precious possessions out of the house. No matter how much they prepared, they couldn’t stop the damage.

“Depending on how high the water is, you have to tear out the 4 feet of sheetrock, painting, floors, carpeting, furniture. Anything that got wet has to be torn out and thrown away,” Goff said. “It is frustrating, but you know, there’s always a bright side in every situation. We have our lives. We’re blessed. We’re fortunate. We work for a great company. So at some point, you rebuild. You just have to go on.”

Her story is just one of many from across the company of dedicated employees who worked through the storm, even while it threatened or damaged their homes.

“I had coworkers on my team who were also experiencing flooding situations. They experienced them in Hurricane Matthew, as well as in Hurricane Florence. So, quite a few of us were dealing with different issues going on, while we were trying to make sure our customers were taken care of,” Goff explained. “But we all know the process. We all know what needs to be done. We want to make sure everybody’s safe. We’re a good team. We all work together.”



Senior engineers Caleb Rodgers and Todd Crawford ride back to dry land after an evening check of the AquaDam. This railroad crossing sign in Riverfront Park shows the depth of the rising waters.

Battling Florence Flooding: By the Numbers



Waccamaw sets new historic crest at 21.16 feet (gauge height). The previous record was 17.87 feet from Hurricane Matthew.

29: Days of serving meals



1,405: Bojangles biscuits

6,100: Pounds of ice



>60: Pumps

>120: Hoses



>300: Life jackets

>200: Chest waders



200: Tetanus shots (preventative)



290: People involved in the mission



>20: Cases of bug spray



200: Blinking police lights (state police escort to get AquaDam from state line to Conway)



3: Waterlogged phones



A photograph of a man in a blue and white striped shirt working in a wool mill. He is standing in the background, reaching up to a large spool of white wool. In the foreground, there are several large, white, ribbed spools of wool. The background shows industrial equipment and bright overhead lights.

A Soul for Wool

Motorists unfamiliar with the small town of Jamestown, South Carolina, likely conclude there's not too much comprising the municipality of fewer than 100 souls. There's the convenience store with its gasoline and diesel pumps, which serves as a primary gathering spot, and a quaint post office. A church also makes its home there, not far from the center of town.

Located at the intersection of U.S. Highway 17A and S.C. Highway 41 in northeastern Berkeley County, Jamestown is, in fact, the location of a specialized manufacturing facility making a product that humans have prized and produced for thousands of years. This product has been a mainstay for many cultures throughout the world, providing a livelihood, food and perhaps most important, warmth in cold climes.

That product is wool, produced continuously just outside the Jamestown town limits since 1955. How specialized and special is it? Plant Manager Cliff Cox explains.

By Willard Strong
Photography by Paul Zoeller

Above: Anthony McCray is feeding wool that has been scoured and carded and about to be combed.

Right: Wool arrives raw and ready to be refined.





Left: Claude Morris feeds the combing machine where remaining vegetable matter and small entanglements are removed.

Below: Trevor Goodwin starts the process by opening the bales of “greasy wool” that are received directly from the farms and warehouses.



“We are the only wool-combing manufacturing facility remaining in the United States,” said Cox. “We process about 3,000 metric tonnes a year or about half of the ‘American clip.’”

That’s approximately 3,307 tons or about 6.6 million pounds of wool leaving the facility annually. This represents the fleeces of about 1.8 million sheep.

Chargeurs Wool USA expresses weights and measures by the metric system. That’s because, since the plant opened 64 years ago as the Santee River Wool Combing Co., it has been owned by a French-based firm that, like most of Europe, is metric-based. Today, Chargeurs Wool USA is the owner and operator of the plant.

Cox, a native of nearby Andrews, has been working at Chargeurs since 1977. The company hires locally, including management. In fact, he said the parent firm’s style is to let him run the plant and do what he says they do best: produce a consistently high-quality, world-class wool product that meets exacting manufacturing standards.

“They (Chargeurs) are interested in results,” Cox said. “They let me and those here concentrate on that. Our main product is ‘wool tops,’ which is the material used to make wool yarn. A byproduct of scouring the wool is ‘wool grease’, which is the source of lanolin primarily used in cosmetics. Other byproducts are mainly short fibers that go into the woolen market used in making, for example, felt hats.”

Wool, shorn from sheep far from South Carolina, arrives by tractor-trailer truck. This is the source of the raw material in their manufacturing process. In years past, it would also arrive by rail.

“We purchase raw wool or ‘greasy’ wool mostly from co-ops and auction warehouses,” Cox said. “Wool production in the United States is mainly in the Western states: Wyoming, Utah, Colorado, South Dakota, Montana and Idaho, but also Texas and California. Coarser wools are found in the Midwest and Northeastern U.S.”

If you go into the area where the raw wool arrives, you notice a distinctive animal smell, the smell of a barnyard. It’s the natural odor of a natural product. From the warehouse, the product is sent on its way to a multistep process.

“The wool is blended, scoured, carded, gilled, combed and baled,” said Cox. “Some then goes to cutting and some to ‘super wash,’ a shrink-resist process for wool garments that will be machine-washed and dried.”

The white bales of the super-soft material are much different than the raw wool that

Lab technician Norma Morris collects small particles as she checks for the level of impurities in a sample of wool.







Clockwise from top left: Julian Gaston moves containers of wool ready to be packaged and shipped. Kevin Huell operates a “gill,” which blends and coils the wool after it has been treated for shrink resistance. Kenny Morris inspects the shrink resisted wool exiting the dryer, where it is then wound onto bobbins. Ken Morris is inspecting the super wash line where the wool is treated for shrink resistance.





Cliff Cox holds finished wool.

quite naturally contains dirty soil and material that the manufacturing process removes. The raw wool that arrives by truck, after processing, leaves the same way for delivery.

“Today, our deliveries are all domestic,” Cox said. “Until the U.S. textiles and other labor-intensive industries went offshore over the last 30 years, we exported about one-half of our product, mainly to Europe.”

Like many other goods, China is big in the production of wool products, along with the traditional producers located in England, Ireland and Scotland.

Said Cox, “Wool yarn is used mainly in knitting for products such as socks and sweaters, but is also used in weaving for products such as high-fashion suits and dresses and, for example, in military dress uniforms. Wool is sustainable and environmentally friendly, has unmatched durability, superior insulation properties, and is comfortable in cold, hot or humid environ-

ments. Unlike synthetics, wool feels good humid or wet.”

Wool bound for military apparel and other uses enjoys a measure of protection from Uncle Sam that benefits the domestic wool industry. Many years ago, Congress deemed it critical that wool produced in the U.S. be the sole source for making wool uniforms and other items. This helps the Jamestown plant remain competitive and viable.

Still, Cox is mindful that he is competing with other fabrics in the marketplace. From a historical perspective in the South, the term “Cotton is King” was a true axiom that resulted in tremendous economic and political sway. Does he consider cotton a “competitor fabric?”

“It is in socks because they’re cheaper,” Cox said. “But not so much in outerwear such as sweaters and coats, because of its poor insulating properties. Cotton garments also lose their shape readily while wool is elastic, so it can stretch and retract leaving the garment shape

unchanged after heavy wear. Cotton is popular because it's cheap."

Still, wool endures. And, said Cox, there are misconceptions about it that today's consumer should know about. Many people likely shy away from considering wool products when they're shopping for clothing. The processed fabric has evolved.

"One of the more common misconceptions is that it is scratchy and therefore uncomfortable," said Cox. "In fact, in the old days, coarser wools were used in pea coats, blankets and some sweaters and socks, so they were, in fact, scratchy. Today, finer, softer wools are selected for next-to-skin items and are not scratchy, but very comfortable."

"Wool worldwide has declined as synthetics became more popular and cheaper. For us, in the short term, the wool market is fairly stable, but over the long term it has declined significantly due to the big players in wool garments seeking cheaper manufacturing prices, mainly from the Far East. Factors that drive demand are the desire for high-quality fiber, the need of wool treated for shrink resistance for garments to be machine washed and dried, and for those more patriotic companies, the fact that it is 'made in the USA.'"

Cox has many employees who have been with him for decades, with "seven who have been here longer than me," he said. "We have eight people who've been here 40 years."

"The people are the best thing about working here," said Amber Marie Delk, the environmental, safety and production manager. "I was initially hired on a temporary assignment to work two weeks, but it has turned into 16 years and I plan to finish my career here. Everyone here is very supportive and they want you to succeed."

Chargeurs Wool USA is a Santee Cooper industrial customer and operates three shifts around



the clock, Monday through Friday, so there is normally no weekend work. Like other industries, Cox sometimes finds it challenging to recruit and retain employees as younger people in today's world often don't stay as long in jobs as they did years ago.

So where can you find an example of the end product that started life on a sheep and was shipped to Jamestown? One example is Farm to Feet wool socks sold in places such as Mast General Stores, Cabela's and REI, as well as in local specialty stores. You can also purchase Farm to Feet socks at their website. The socks are made by Nester Hosiery Inc., a North Carolina firm, and Chargeurs is part of the Farm to Feet supply chain.

It's this regional manufacturing dynamic that has stood the test of time and kept this wool plant humming along.

Cliff Cox shows some samples of Farm To Feet socks made from wool processed in the Jamestown plant. Each set of socks showcases a photo and description of someone working along the supply chain.

HELPING SMALL BUSINESSES SURVIVE & THRIVE

by Phil Fail

photography by Paul Zoeller

Andi Lary is a small business owner with a big problem.

“You take your lights for granted... so when they don’t work you’re like... ‘Really?’” Lary runs One Stop Therapy 4 Kids, a multi-disciplinary pediatric therapy clinic, offering speech, physical and occupational therapy for children from newborns to 18 year olds. The clinic’s florescent ballasts were going bad; some were buzzing, and lights were flickering.

“In some of the offices you’d flip the switch and think ‘Hmm, it doesn’t seem to be working today. Okay we’ll have to use a lamp.’ Then 15-20 minutes later the lights would come on,” Lary said.

For Lary’s clients, lighting is important for more than the usual reason of just having enough illumination to see. Many of the children her clients work with are more sensitive to flickering lights, buzzing or humming than the average person.

“We had a lot of flickering and in some adults, it can trigger a migraine,” Lary explained. “The kids will respond to that as well. They may not be able to say, ‘I’m getting a migraine,’ but you might wonder why their behavior is starting to escalate or even why the therapists themselves are getting a little agitated when the lights aren’t soft and smooth.”





Andi Lary, owner of One Stop Therapy 4 Kids, shows off her clinic and its new lights. With help from Santee Cooper and the Small Business Energy Saver program, the waiting room at One Stop Therapy 4 Kids is inviting and well-lit.



Summary

Your business could spend up to **\$1,413** less on energy per year if you take advantage of our energy efficiency upgrades.

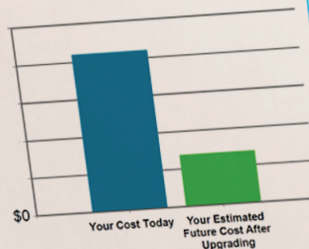
VALUE ADDED BENEFITS

- ✓ **Reduce**
Maintenance Costs
- ✓ **Enhance**
Employee Productivity
- ✓ **Increase**
Customer Comfort to Improve Sales
- ✓ **Improve**
Workplace Safety and Reduce Potential Hazards

EST. INCOME EXPECTED FROM YOUR ENERGY EFFICIENCY INVESTMENT*

\$ Savings after 1 Month.....	\$117.75
\$ Savings after 1 Year.....	\$1,413.04
\$ Savings after 5 Years.....	\$7,065.20

Estimated Annual Lighting Cost Comparison




Est. Annual Savings*	\$1,413.04/yr
Est. Investment Payback**	5 Months
Est. 1st Yr Return on Investment	253%

*Estimated savings in dollars is based on a rate of \$0.099 per kWh applied to projected kWh savings amounts. See Scope of Work for a detailed breakdown of kWh energy savings.
** Estimated investment Payback is the amount of time it is expected to take to recover the project's investment through energy savings, excluding initial installed cost by the annual energy cost savings.

Building: THERAPY CONSORTIUM INC	Existing Fixture		Proposed Fixture		Est. Energy Savings
Location	Existing Type	Qty	Proposed Type	Qty	by Line Item
Floor 1: Hallways	A 2x4, 4-Lamp T12 Fluorescent Fixture	5	will be Retrofit with a 2-Lamp Electronic High Power Ballast, (1) 2x4 Reflector Kit, and (2) 4' T8 LED Lamps.	5	Watts: 700 Est. Hours: 2,868 kWh:2,007
Floor 1: Hallways	An Exit Sign Containing (2) 20w Incandescents	5	No Retrofit	5	Watts: 0 Est. Hours: 8,760 kWh:0
Floor 1: Hallways	A 2x2, 2- U-Lamp T12 Fluorescent Fixture	4	will be Retrofit with a 2-Lamp Electronic High Power Ballast, (1) 2x2 Reflector, and (2) 2' T8 LED Lamps.	4	Watts: 274 Est. Hours: 2,868 kWh:786
Floor 1: Hallways	A Round, 1- 10W Lamp, LED	3	No Retrofit	3	Watts: 0 Est. Hours: 2,868 kWh:0
Floor 1: Office Spaces	A 2x4, 4-Lamp T12 Fluorescent Fixture	19	will be Retrofit with a 2-Lamp Electronic High Power Ballast, (1) 2x4 Reflector Kit, and (2) 4' T8 LED Lamps.	19	Watts: 2,660 Est. Hours: 3,129 kWh:8,322
Floor 1: Office Spaces	A 2x2, 2- U-Lamp T12 Fluorescent Fixture	3	will be Retrofit with a 2-Lamp Electronic High Power Ballast, (1) 2x2 Reflector, and (2) 2' T8 LED Lamps.	3	Watts: 205 Est. Hours: 3,129 kWh:643
Floor 1: Restrooms	A 2x4, 4-Lamp T12 Fluorescent Fixture	2	will be Retrofit with a 2-Lamp Electronic High Power Ballast, (1) 2x4 Reflector Kit, and (2) 4' T8 LED Lamps.	2	Watts: 280 Est. Hours: 3,129 kWh:876
Floor 1: Office Spaces	An Exit Sign Containing (2) 20w Incandescents	3	No Retrofit	3	Watts: 0 Est. Hours: 3,129 kWh:0
Floor 1: Office Spaces	A 60w R30 Incandescent Fixture	10	will be replaced with a 9w BR30 Dimming LED Lamp.	10	Watts: 510 Est. Hours: 3,129 kWh:1,596

Page 2

Customers receive a proposal that outlines the unique advantages for their specific business, including costs and return on investment.



Facing a cost of \$25 to \$40 for each new ballast, Lary recalled a recent email she'd received inviting her to participate in the Santee Cooper Small Business Energy Saver pilot program.

Lary said, "I filled out the application online and the next day, someone from Lime Energy called me and asked, 'Can we send someone out to assess your situation, and see if it's something you want to do?'"

Small business is the lifeblood of the American economy, responsible for about two-thirds of the gross national product. According to the U. S. Small Business Administration, small businesses in the United States employ nearly 85 million Americans. They are the economic heart of our local communities. As a matter of fact, 66 percent of the money spent with local small businesses stays in local communities, driving other small business.

So when it came time to revamp some of Santee Cooper's programs to promote energy efficiency, our energy advisors and program developers were surprised to find out that small businesses were underrepresented in the group of commercial customers who have participated in the programs for which they qualify.

"We analyzed all our customers and determined that a lot of our bigger customers were taking advantage of our current energy-efficiency programs, but our smaller customers weren't," said Steven Roys, financial analyst and a four-year veteran of Santee Cooper's program development department. "We wanted a program where we would be able to reach more of our small business customers who historically hadn't participated. Anyone who is on our GA rate can participate in this program. That's about 20,000 customers, or two-thirds of our commercial accounts."

As it turns out, small business owners and managers are preoccupied with operating their businesses, keeping their customers happy, making payroll, and generally minding what they do best. Other things, like seeking out energy-efficiency upgrades, tend to get overlooked.

"Business owners only think about their energy bill about 12 minutes a year; that's when they open the bill, pay it, and they're done," said Tim Lewis, Southeast regional vice president for Lime Energy, Santee Cooper's partner in our Small Business Energy Saver program. "Since 1982, the National Federation of Independent Business has conducted the Small Business Problems and Priorities Research Report. In 2016, energy costs ranked 19th and energy efficiency ranked 53rd in terms of importance out of 75 topics. It's typically not a high priority."

Until now, Santee Cooper's energy-efficiency programs encouraged our customers to work with our network of Trade Allies. The customer was in charge of making contact, working out the deals, researching return on investment, making sure they were having the contractor install the right product while also keeping their customers happy and the doors open. Santee Cooper's energy advisors always were available to lend expertise when asked, but for the most part, small business owners just don't have that kind of time to invest.

That's where Lime Energy comes in. Lewis said Lime is the nation's leading provider of energy-efficiency solutions for utilities. Since 2007, they've been perfecting their skills by offering direct install programs from coast to coast. More than 15,000 small businesses in the Carolinas and over 130,000 small businesses nationwide have already taken advantage of their programs and Lime takes care of the process from soup to nuts – and ballasts to bulbs. They, in effect, become the in-house expert small businesses just don't have.





Here's how it works:

Utilizing business intelligence software and marketing statistics, Lime identifies the customers who would benefit the most from the program. They send out program outreach coordinators and energy service representatives, the company's feet on the street, who go door-to-door talking to small business owners about the program and what Santee Cooper is offering. If the customer is interested, a Lime Energy service representative performs a free assessment, and walks through the business pointing out lighting and refrigeration upgrades that make sense for that business. Then they return with a detailed proposal, down to the individual light, and explain costs, available Santee Cooper rebates that apply, projected energy savings, the project ROI, and how long it will take to pay for itself. In many cases, Lime can provide a proposal on the spot and the small business owner can decide to upgrade their inefficient measures that day.

"That's the great thing about what we do for small businesses. We give them a proposal, they sign on the dotted line, and then we take care of ordering the material and getting local contractors to do the installation," said Lewis. "Then we follow up with them to make sure that everything was installed to their satisfaction and we installed what they wanted. We also warranty the measures that were installed. If it was a five-year manufacturer's warranty for a lighting measure, we will cover labor and materials for the full five years."

"That's the best part about this program, I think. It's totally turnkey. You just can't beat the ease and price of it," explained Pam Wrenn, Santee Cooper energy advisor and manager of the Small Business Energy Saver program. "Lime takes the process from beginning to end. Santee Cooper may rebate up to 80 percent of the total project cost. Lime offers zero percent financing for up to two years and a warranty. They even take care of all the paperwork. It's good stuff."

"It was very, very easy. All I had to do was to fill the information out and sign it. They even sent me a DocuSign after we had agreed this is what we wanted to do," said Lary. "I got a survey last week that I filled out. It was a very easy process. I was excited."

"I tell a lot of people about it because if you have a small business, you ought to think about it. One of my physical therapists' husbands is a doctor and I reached out to him to look into this program. It's a really good program and if you've got Santee Cooper, you should go for it."

The Small Business Energy Saver program is in the pilot phase through March 2019. Early indications are that the program is being well received and Santee Cooper hopes to expand it later this year. If you, your favorite small business or someone you know might benefit from the program, check out santeecooper.com/SBES or give us a call to schedule a free assessment at 833-208-5957.

Pam Wrenn, Santee Cooper Energy Advisor and manager of the Small Business Energy Saver program, said it is easy for the customers to participate in the program.



Santee Cooper Enhancing Economic Development in York, Sumter Counties

Santee Cooper recently provided the Rock Hill Economic Development Corp. a \$767,500 grant to assist in developing infrastructure for the planned Aspen Commerce Park located within the City of Rock Hill.

The infrastructure funding will be used for roads, providing electric service, water and sewer service to the site, and for stormwater management.

Santee Cooper also awarded Sumter County a \$1 million loan to assist in the construction of a 50,000 square-foot speculative building in the Black River Airport Industrial Park near Sumter. The estimated cost of the building is approximately \$2.8 million, with funding from a variety of sources, in addition to Santee Cooper.

“Part of Santee Cooper’s mission is to promote economic development across the state, and we have been successful in helping fund industrial sites,” said Pamela Williams, Santee Cooper senior vice president of corporate services. “These are investments that will attract new businesses and yield good jobs for South Carolinians.”

CBRE, JLL Marketing Camp Hall

Santee Cooper has selected CBRE and JLL Carolinas to market for development two tracts at Camp Hall, the 6,800-acre next-generation commerce park. That park is home to Volvo Car USA’s first U.S. automobile manufacturing plant and designed to meet the needs of a modern industrial community.

CBRE will market Campus One, an 88-acre land tract, within the master-planned industrial community located outside of Charleston in Ridgeville. The site is fully entitled and serviced, with additional enhancements in process.

“We’re very excited to market this tract for sale as it is part of such a unique industrial park with amenities developers are looking for and excellent infrastructure,” said Bob Barrineau, senior vice president at CBRE. “Camp Hall offers a variety of options for companies with site development opportunities of 10 to 30 acres. A brand new I-26 interchange will be complete in early 2019.”

JLL Carolinas will market 100 acres for sale at Camp Hall’s Campus Four. The site is ideal for manufacturers, logistics companies and other users seeking a premier location with uncommon amenities for employees.

“Camp Hall checks every box for industrial users while allowing them to recruit and retain the best talent,” said Lee Allen, managing director with JLL. “This site is a rare opportunity to be a part of an innovative, master-planned commerce park that will provide the live-work-play environment today’s employees crave.”

Santee Cooper Achieves Energy Efficiency Goal Two Years Early

Customers Saved \$250 Million

Santee Cooper announced in December that energy-efficiency programs are saving customers 209 gigawatt-hours a year, an energy savings goal reached two years ahead of its 2020 target. Even better, these programs have saved customers more than \$250 million since their launch in 2008.

Santee Cooper's Reduce The Use programs have helped more than 73,000 of its 185,000 residential and commercial direct-service customers in Berkeley, Georgetown and Horry counties save energy and money.

The 2018 annual energy savings is enough to power the needs of more than 16,500 average residential customers.

Through Reduce The Use, Santee Cooper offers customers rebates for a variety of energy-efficiency improvements, from smart thermostats for their homes to lighting controls for their businesses. It also offers the Smart Energy Loan program, a low-interest loan that helps residential customers make upgrades such as high-efficiency electric heat pumps, duct replacements and heat pump water heaters.

"Santee Cooper's ability to achieve our 2020 goal in 2018 shows the strength of the energy-efficiency programs we have developed over the years," said Jim Brogdon, interim president and CEO. "Our conservation and energy-efficiency team has worked hard to promote these programs with our customers, with significant results in energy and cost savings."

When it was introduced, Reduce The Use was a first-of-its-kind energy-efficiency approach in South Carolina. Santee Cooper has been the state's leader in both energy efficiency and renewable energy programs, providing renewable Green Power to meet customer needs since 2001.

Santee Cooper will continue helping customers Reduce The Use for the next two years, while also establishing a new 2030 plan with additional energy-efficiency and beneficial-electrification programs.

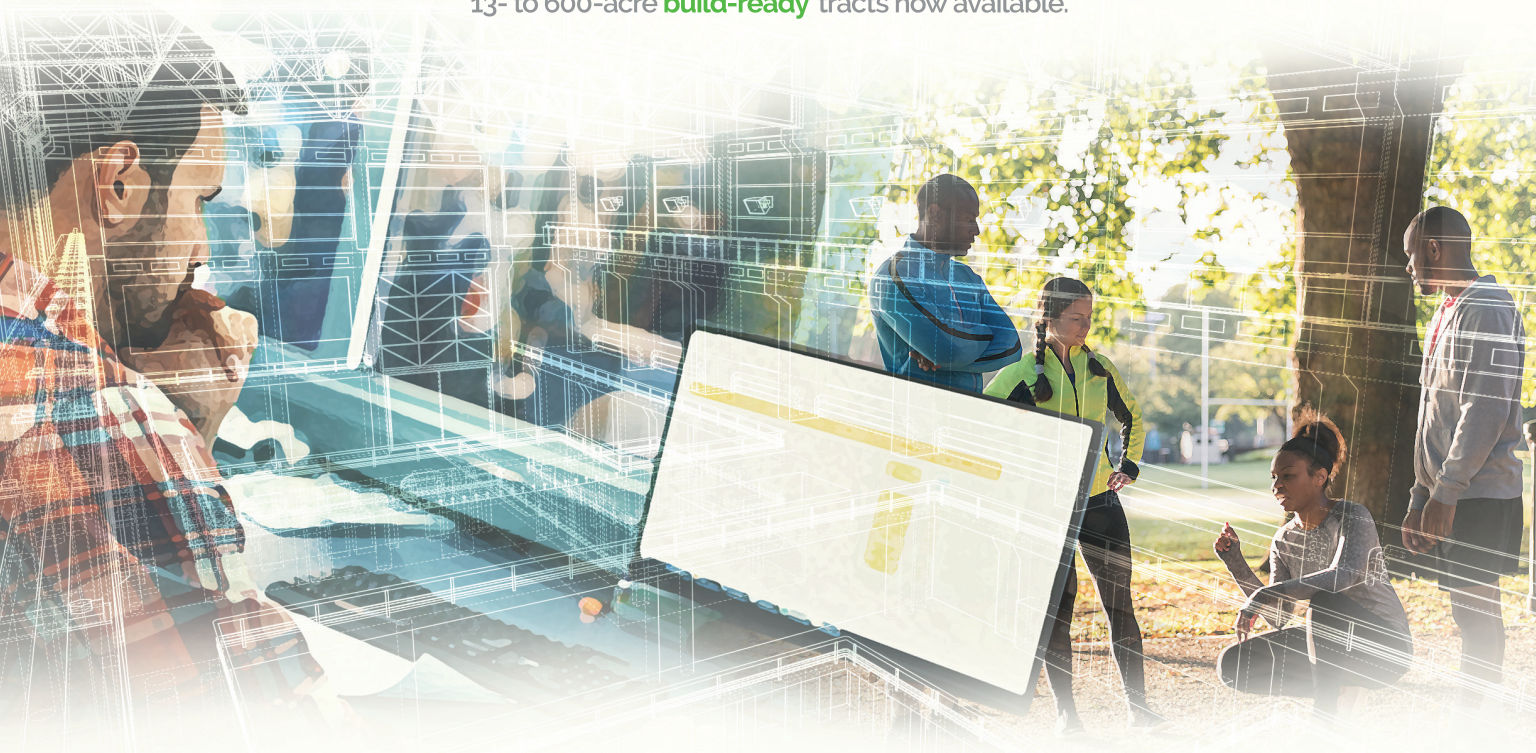
Designed with the **MODERN WORKFORCE** in mind

Camp Hall is a new breed of commerce park— one thoughtfully constructed for human connection and ready to meet the demands of the 21st century.

Beyond its extensive benefits of location and infrastructure, the Charleston region stands ready with a workforce of over 350,000.

Camp Hall creates a place of commerce, convenience and community where the workforce can truly thrive in all areas of their lives.

13- to 600-acre **build-ready** tracts now available.



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